

Appl. No. 09/833,107
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IN THE CLAIMS

Please amend claims 89, 91, 93, and 96 as follows below.

This listing of claims will replace all prior versions, and listings, of claims in the application:

MARKED UP VERSION OF CLAIMS

1 1. (Original) A fiber optic module for coupling
2 photons between optoelectronic devices and optical fibers, the
3 fiber optic module comprising:
4 a base;
5 a first horizontal printed circuit board (PCB) arranged
6 horizontally with the base and parallel to a first optical
7 axis of a first optoelectronic device, the first
8 optoelectronic device having terminals coupled to the first
9 horizontal printed circuit board; and
10 a second vertical printed circuit board (PCB) arranged at
11 a perpendicular angle with the base and parallel to a second
12 optical axis of a second optoelectronic device, the second
13 optoelectronic device having terminals coupled to the second
14 vertical printed circuit board.

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1 2. (Original) The fiber optic module of claim 1
2 further comprising:
3 a housing coupled to the base.

1 3. (Original) The fiber optic module of claim 2
2 wherein,

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3 the housing is a shielded housing to encase the first and
4 second printed circuit boards to reduce electromagnetic
5 interference (EMI).

1 4. (Original) The fiber optic module of claim 3
2 wherein,

3 the housing has an inner septum to separate the fiber
4 optic module into a first side and a second side and the inner
5 septum is a conductive shield to reduce crosstalk
6 electromagnetic radiation.

1 5. (Original) The fiber optic module of claim 1
2 wherein,

3 the base has a first and second opening;
4 the first horizontal printed circuit board has a
5 plurality of pins extending through the first opening in the
6 base to couple to a host printed circuit board; and
7 the second vertical printed circuit board has a plurality
8 of pins extending through the second opening in the base to
9 couple to the host printed circuit board.

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1 6. (Original) The fiber optic module of claim 5
2 wherein,

3 the first and second opening in the base are a plurality
4 of pin holes in the base.

1 7. (Original) The fiber optic module of claim 5
2 wherein,

3 the first and second opening in the base are a first and

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4 second cutout in the base.

1 8. (Original) The fiber optic module of claim 1
2 wherein, the first horizontal and second vertical printed
3 circuit boards further comprises:

4 electrical components coupled between the first
5 optoelectronic device and the plurality of pins of the first
6 printed circuit board and between the second optoelectronic
7 device and the plurality of pins of the second printed circuit
8 board, the electrical components for controlling the first and
9 second optoelectronic devices.

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Cm/X*
1 9. (Original) The fiber optic module of claim 1
2 wherein, the first horizontal printed circuit board further
3 comprises:

4 a ground plane to reduce electro-magnetic fields
5 generated by the electrical components.

1 10. (Original) The fiber optic module of claim 1
2 wherein, the second vertical printed circuit board further
3 comprises:

4 a ground plane to reduce electro-magnetic fields
5 generated by the electrical components.

1 11. (Original) The fiber optic module of claim 1

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2 further comprising:

3 a first optical block coupled to the first optoelectronic
4 device, the first optical block having a first opening to
5 receive the first optoelectronic device, and
6 a first lens to couple photons between the first
7 optoelectronic device and an optical fiber.

1 12. (Original) The fiber optic module of claim 11
2 further comprising:

3 a nose coupled to the base, the nose to receive an
4 optical fiber connector and to hold an optical fiber
5 substantially fixed and aligned with an optical opening of the
6 optical block.

1 13. (Original) The fiber optic module of claim 12
2 further comprising:

3 a nose shield surrounding the nose to reduce
4 electromagnetic interference.

1 14. (Original) The fiber optic module of claim 1
2 further comprising:

3 a second optical block coupled to the second
4 optoelectronic device, the second optical block having
5 a second opening to receive the second optoelectronic
6 device, and
7 a second lens to couple photons between the second
8 optoelectronic device and an optical fiber.

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1 15. (Original) The fiber optic module of claim 11
2 further comprising:
3 a second optical block coupled to the second
4 optoelectronic device, the second optical block having
5 a second opening to receive the second optoelectronic
6 device, and
7 a second lens to couple photons between the second
8 optoelectronic device and an optical fiber.

1 16. (Original) The fiber optic module of claim 1
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2 further comprising:
3 an optical block coupled to the first and second
4 optoelectronic devices, the optical block having
5 first and second openings to receive the first and second
6 optoelectronic devices,
7 a first lens to couple photons between the first
8 optoelectronic device and a first optical fiber, and
9 a second lens to couple photons between the second
10 optoelectronic device and a second optical fiber.

1 17. (Original) The fiber optic module of claim 16,
2 wherein,
3 the first lens of the optical block to launch photons
4 into the first optical fiber from the first optoelectronic
5 device.

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1 18. (Original) The fiber optic module of claim 16,
2 wherein,
3 the second lens of the optical block is a focusing lens
4 to receive photons from the second optical fiber and to couple
5 them to the second optoelectronic device.

1 19. (Original) The fiber optic module of claim 16
2 further comprising:

3 a nose coupled to the base, the nose to receive an
4 optical fiber connector and to hold an optical fiber
5 substantially fixed and aligned with an optical opening of the
6 optical block.

1 20. (Original) The fiber optic module of claim 19
2 further comprising:
3 a nose shield surrounding the nose to reduce
4 electromagnetic interference.

1 21. (Original) The fiber optic module of claim 13,
2 wherein,
3 the first optoelectronic device is a photodetector.

1 22. (Original) The fiber optic module of claim 13,
2 wherein,
3 the second optoelectronic device is an emitter.

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1 23. (Original) The fiber optic module of claim 22,
2 wherein,
3 the emitter is a vertical cavity surface emitting laser
4 (VCSEL).

1 24. (Original) A fiber optic transceiver for coupling
2 photons between optoelectronic devices and optical fibers, the
3 fiber optic transceiver comprising:

4 a base;
5 a first vertical printed circuit board (PCB) arranged at
6 a perpendicular angle with the base and parallel to a first
7 optical axis of a first optoelectronic device, the first
8 vertical printed circuit board having a first connecting means
9 to couple to an external printed circuit board, the first
10 optoelectronic device having terminals coupled to the first
11 vertical printed circuit board;

12 a second slanted printed circuit board (PCB) arranged at
13 an angle with the base and parallel to a second optical axis
14 of a second optoelectronic device, the second slanted printed
15 circuit board having a second connecting means to couple to an
16 external printed circuit board, the second optoelectronic
17 device having terminals coupled to the second slanted printed
18 circuit board;

19 a housing coupled to the base, the housing to cover the
20 first vertical printed circuit board and the second slanted
21 printed circuit board.

1 25. (Original) The fiber optic transceiver of claim 24

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2 wherein,

3 the first vertical printed circuit board further
4 comprises:

5 first electrical components coupled between the
6 first optoelectronic device and the first connecting
7 means on a first side of the first internal printed
8 circuit board, the first electrical components for
9 controlling the first optoelectronic device, and

10 a first ground plane coupled to a second side of the
11 first internal printed circuit board to reduce electro-
12 magnetic fields;

13 and,

14 the second slanted printed circuit board further
15 comprises:

16 second electrical components coupled between the second
17 optoelectronic device and the second connecting means on a
18 first side of the second slanted printed circuit board, the
19 second electrical components for controlling the second
20 optoelectronic device.

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1 26. (Original) The fiber optic transceiver of claim 25
2 wherein,

3 the second slanted printed circuit board further
4 comprises:

5 a second ground plane coupled to a second side of
6 the second slanted printed circuit board to reduce
7 electro-magnetic fields.

1 27. (Original) The fiber optic transceiver of claim 24,

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2 wherein,

3 the first connecting means and the second connecting
4 means are pins to couple to pin receptacles of the external
5 printed circuit board.

1 28. (Original) The fiber optic transceiver of claim 24,

2 wherein,

3 the first connecting means and the second connecting
4 means are connectors to couple into connectors of the external
5 printed circuit board.

1 29. (Original) The fiber optic transceiver of claim 24

2 further comprising:

3 an optical block coupled to the first optoelectronic
4 device and the second optoelectronic device, the optical block
5 having a first lens to couple photons between the first
6 optoelectronic device and a first optical fiber and a second
7 lens to couple photons between the second optoelectronic
8 device and a second optical fiber.

1 30. (Original) The fiber optic transceiver of claim 24

2 further comprising:

3 a first optical block coupled to the first optoelectronic
4 device, the first optical block having a first lens to couple
5 photons between the first optoelectronic device and a first
6 optical fiber, and

7 a second optical block coupled to the second

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8 optoelectronic device, the second optical block having a
9 second lens to couple photons between the second
10 optoelectronic device and a second optical fiber.

1 31. (Original) The fiber optic transceiver of claim 24
2 further comprising:

3 a nose coupled to the base, the nose for receiving an
4 optical fiber connector and holding a pair of optical fibers
5 substantially fixed and aligned with the first optoelectronic
6 device and the second optoelectronic device.

1 32. (Original) The fiber optic transceiver of claim 31
2 further comprising:

3 a nose shield surrounding the nose to reduce
4 electromagnetic interference.

1 33. (Original) The fiber optic transceiver of claim 24
2 further comprising:

3 an internal shield inserted between the first vertical
4 printed circuit board and the second slanted printed circuit
5 board, the internal shield to reduce electrical crosstalk.

1 34. (Original) A fiber optic module for coupling
2 photons between optoelectronic devices and optical fibers, the
3 fiber optic module comprising:

4 a base;

5 a first slanted printed circuit board (PCB) arranged on a
6 slanted angle with the base and parallel to a first optical

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7 axis of a first optoelectronic device, the first slanted
8 printed circuit board having a ground plane on one side, the
9 first optoelectronic device having terminals coupled to the
10 first slanted printed circuit board;
11 a second vertical printed circuit board (PCB) arranged at
12 a perpendicular angle with the base and parallel to a second
13 optical axis of a second optoelectronic device, the second
14 optoelectronic device having terminals coupled to the second
15 vertical printed circuit board; and
16 a housing coupled to the base.

1 35. (Original) The fiber optic module of claim 34
2 wherein,

3 the housing is a shielded housing to encase the first
4 slanted and second vertical printed circuit boards to reduce
5 electromagnetic interference (EMI).

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1 36. (Original) The fiber optic module of claim 34
2 wherein,

3 the second vertical printed circuit board has a ground
4 plane on one side.

1 37. (Original) A fiber optic module for coupling
2 photons between optoelectronic devices and optical fibers, the
3 fiber optic module comprising:

4 a base;
5 a first slanted printed circuit board (PCB) arranged on a
6 slanted angle with the base and parallel to a first optical
7 axis of a first optoelectronic device, the first

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8 optoelectronic device having terminals coupled to the first
9 slanted printed circuit board; and
10 a second slanted printed circuit board (PCB) arranged on
11 a slanted angle with the base and parallel to a second optical
12 axis of a second optoelectronic device, the second slanted
13 printed circuit board having a ground plane on one side, the
14 second optoelectronic device having terminals coupled to the
15 second vertical printed circuit board; and
16 a housing coupled to the base.

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1 38. (Original) The fiber optic module of claim 37
2 wherein,
3 the housing is a shielded housing to encase the first and
4 second printed circuit boards to reduce electromagnetic
5 interference (EMI).

1 39. (Original) The fiber optic module of claim 37
2 wherein,
3 the first slanted printed circuit board has a ground
4 plane on one side.

1 40. (Original) A fiber optic module comprising:
2 a first optical block having a first opening to receive a
3 first optoelectronic device;
4 the first optoelectronic device coupled into the first
5 opening;
6 a second optical block having a second opening to receive
7 a second optoelectronic device;
8 the second optoelectronic device coupled into the second

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9 opening;

10 a first printed circuit board coupled to terminals of the
11 first optoelectronic device in parallel with a plane of the
12 first optical block, the first printed circuit board parallel
13 to a first optical axis of the first optoelectronic device;
14 and

15 a second printed circuit board coupled to terminals of
16 the second optoelectronic device perpendicular with a plane of
17 the second optical block, the second printed circuit board
18 parallel to a second optical axis of the second optoelectronic
19 device.

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1 41. (Original) The fiber optic module of claim 40,
2 wherein the fiber optic module is a fiber optic transceiver
3 and

4 the first optoelectronic device is a transmitter to
5 couple photons into a first optical fiber, and

6 the second optoelectronic device is a receiver to receive
7 photons from a second optical fiber.

1 42. (Original) The fiber optic module of claim 40,
2 wherein the fiber optic module is a fiber optic transceiver
3 and

4 the first optoelectronic device is a receiver to receive
5 photons from a first optical fiber, and

6 the second optoelectronic device is a transmitter to
7 couple photons into a second optical fiber.

1 43. (Original) A fiber optic module comprising:

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2 an optical block having a first opening to receive a
3 first optoelectronic device and a second opening to receive a
4 second optoelectronic device;

5 the first optoelectronic device coupled into the first
6 opening;

7 the second optoelectronic device coupled into the second
8 opening;

9 a base having a first guide rail;

10 a first vertical printed circuit board coupled to
11 terminals of the first optoelectronic device in parallel to a
12 first optical axis of the first optoelectronic device, the
13 first vertical printed circuit board coupled to the first
14 guide rail of the base perpendicular with the base; and

15 a second horizontal printed circuit board coupled to
16 terminals of the second optoelectronic device in parallel to a
17 second optical axis of the second optoelectronic device, the
18 second horizontal printed circuit board parallel to the base.

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1 44. (Original) The fiber optic module of claim 43
2 further comprising:
3 a housing coupled to the base.

1 45. (Original) The fiber optic module of claim 44
2 wherein,
3 the housing is a shielded housing to encase the first
4 vertical and second horizontal printed circuit boards to
5 reduce electromagnetic interference (EMI).

1 46. (Original) The fiber optic module of claim 43

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2 wherein,

3 the base has a pair of cutouts to allow pins of the first
4 vertical printed circuit board and pins of the second
5 horizontal printed circuit board to extend through.

1 47. (Original) The fiber optic module of claim 43

2 wherein,

3 the base has a pair of openings to allow pins of the
4 first vertical printed circuit board and pins of the second
5 horizontal printed circuit board to extend through.

1 48. (Original) The fiber optic module of claim 43,

2 wherein the fiber optic module is a fiber optic transceiver
3 and

4 the first optoelectronic device is a transmitter to
5 couple photons into a first optical fiber, and
6 the second optoelectronic device is a receiver to receive
7 photons from a second optical fiber.

1 49. (Original) The fiber optic module of claim 43,

2 wherein the fiber optic module is a fiber optic transceiver
3 and

4 the first optoelectronic device is a receiver to receive
5 photons from a first optical fiber, and
6 the second optoelectronic device is a transmitter to
7 couple photons into a second optical fiber.

1 50. (Original) A fiber optic module comprising:

2 an optical block having a first opening to receive a

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3 first optoelectronic device and a second opening to receive a
4 second optoelectronic device;

5 the first optoelectronic device coupled into the first
6 opening;

7 the second optoelectronic device coupled into the second
8 opening;

9 a base having a pair of brackets on one side;

10 a first vertical printed circuit board coupled to
11 terminals of the first optoelectronic device in parallel to a
12 first optical axis of the first optoelectronic device, the
13 first vertical printed circuit board coupled to the pair of
14 brackets of the base; and

15 a second horizontal printed circuit board coupled to
16 terminals of the second optoelectronic device in parallel to a
17 second optical axis of the second optoelectronic device, the
18 second horizontal printed circuit board parallel to the base.

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1 51. (Original) The fiber optic module of claim 50
2 further comprising:

3 a housing coupled to the base.

1 52. (Original) The fiber optic module of claim 50
2 wherein,

3 the housing is a shielded housing to encase the first
4 vertical and second horizontal printed circuit boards to
5 reduce electromagnetic interference (EMI).

1 53. (Original) The fiber optic module of claim 50
2 wherein,

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3 the base has a pair of cutouts to allow pins of the first
4 vertical printed circuit board and pins of the second
5 horizontal printed circuit board to extend through.

1 54. (Original) The fiber optic module of claim 50
2 wherein,

3 the base has a pair of openings to allow pins of the
4 first vertical printed circuit board and pins of the second
5 horizontal printed circuit board to extend through.

1 55. (Original) The fiber optic module of claim 50,
2 wherein the fiber optic module is a fiber optic transceiver
3 and

4 the first optoelectronic device is a transmitter to
5 couple photons into a first optical fiber, and

6 the second optoelectronic device is a receiver to receive
7 photons from a second optical fiber.

1 56. (Original) The fiber optic module of claim 50,
2 wherein the fiber optic module is a fiber optic transceiver
3 and

4 the first optoelectronic device is a receiver to receive
5 photons from a first optical fiber, and

6 the second optoelectronic device is a transmitter to
7 couple photons into a second optical fiber.

1 57. (Original) A fiber optic module comprising:
2 an optical block having a first opening to receive a
3 first optoelectronic device and a second opening to receive a

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4 second optoelectronic device, the optical block further having
5 a first slot to receive an end of a first vertical printed
6 circuit board and a second slot to receive an end of a second
7 horizontal printed circuit board;

8 the first optoelectronic device coupled into the first
9 opening;

10 the second optoelectronic device coupled into the second
11 opening;

12 a base;

13 the first vertical printed circuit board coupled to
14 terminals of the first optoelectronic device in parallel to a
15 first optical axis of the first optoelectronic device, the
16 first vertical printed circuit board coupled to the first slot
17 of the optical block perpendicular with the base; and

18 the second horizontal printed circuit board coupled to
19 terminals of the second optoelectronic device in parallel to a
20 second optical axis of the second optoelectronic device, the
21 second horizontal printed circuit board coupled to the second
22 slot of the optical block in parallel with the base.

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1 58. (Original) The fiber optic module of claim 57
2 further comprising:
3 a housing coupled to the base.

1 59. (Original) The fiber optic module of claim 58
2 wherein,
3 the housing is a shielded housing to encase the first
4 vertical and second horizontal printed circuit boards to
5 reduce electromagnetic interference (EMI).

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1 60. (Original) The fiber optic module of claim 57
2 wherein,
3 the base has a pair of cutouts to allow pins of the first
4 vertical printed circuit board and pins of the second
5 horizontal printed circuit board to extend through.

1 61. (Original) The fiber optic module of claim 57
2 wherein,
3 the base has a pair of openings to allow pins of the
4 first vertical printed circuit board and pins of the second
5 horizontal printed circuit board to extend through.

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1 62. (Original) The fiber optic module of claim 57,
2 wherein the fiber optic module is a fiber optic transceiver
3 and
4 the first optoelectronic device is a transmitter to
5 couple photons into a first optical fiber, and
6 the second optoelectronic device is a receiver to receive
7 photons from a second optical fiber.

1 63. (Original) The fiber optic module of claim 57,
2 wherein the fiber optic module is a fiber optic transceiver
3 and
4 the first optoelectronic device is a receiver to receive
5 photons from a first optical fiber, and
6 the second optoelectronic device is a transmitter to
7 couple photons into a second optical fiber.

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1 64. (Original) A fiber optic module comprising:
2 an optical block having a first opening to receive a
3 first optoelectronic device and a second opening to receive a
4 second optoelectronic device;
5 the first optoelectronic device coupled into the first
6 opening;
7 the second optoelectronic device coupled into the second
8 opening;
9 a base;
10 a slanted printed circuit board (PCB) coupled to
11 terminals of the first optoelectronic device in parallel to a
12 first optical axis of the first optoelectronic device, the
13 slanted printed circuit board arranged at an angle to slant
14 inward from the base; and
15 a vertical printed circuit board (PCB) coupled to
16 terminals of the second optoelectronic device in parallel to a
17 second optical axis of the second optoelectronic device, the
18 vertical printed circuit board arranged at a perpendicular
19 angle with the base.

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1 65. (Original) The fiber optic module of claim 64
2 further comprising:
3 a housing coupled to the base.

1 66. (Original) The fiber optic module of claim 65
2 wherein,
3 the housing is a shielded housing to encase the first
4 slanted and second vertical printed circuit boards to reduce

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5 electromagnetic interference (EMI).

1 67. (Original) The fiber optic module of claim 65
2 wherein,
3 the slanted printed circuit board and the vertical
4 printed circuit board each have a plurality of pins to couple
5 to a host system printed circuit board.

1 68. (Original) The fiber optic module of claim 67
2 wherein,
3 the base has a pair of cutouts to allow the pins of the
4 slanted printed circuit board and the pins of the vertical
5 printed circuit board to extend through.

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1 69. (Original) The fiber optic module of claim 67
2 wherein,
3 the base has a pair of openings to allow the pins of the
4 slanted printed circuit board and the pins of the vertical
5 printed circuit board to extend through.

1 70. (Original) The fiber optic module of claim 64,
2 wherein the fiber optic module is a fiber optic transceiver
3 and
4 the first optoelectronic device is a transmitter to
5 couple photons into a first optical fiber, and
6 the second optoelectronic device is a receiver to receive
7 photons from a second optical fiber.

1 71. (Original) The fiber optic module of claim 64

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2 wherein,

3 the slanted printed circuit board and the vertical
4 printed circuit board each have a connector to couple to a
5 connector of a host system printed circuit board.

1 72. (Original) The fiber optic module of claim 64

2 further comprising:

3 a housing having an opening at an end coupled to the
4 base.

1 73. (Original) The fiber optic module of claim 72,

2 wherein,

3 the slanted printed circuit board and the vertical
4 printed circuit board each have a connector to couple to a
5 connector of a host system printed circuit board through the
6 opening at the end of the housing.

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1 74. (Original) The fiber optic module of claim 64

2 wherein,

3 the base includes an inner septum to separate the fiber
4 optic module into a first side and a second side.

1 75. (Original) A fiber optic module comprising:

2 an optical block having a first opening to receive a
3 first optoelectronic device and a second opening to receive a
4 second optoelectronic device;

5 the first optoelectronic device coupled into the first
6 opening;

7 the second optoelectronic device coupled into the second

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8 opening;
9 a base;
10 a slanted printed circuit board (PCB) coupled to
11 terminals of the first optoelectronic device in parallel to a
12 first optical axis of the first optoelectronic device, the
13 slanted printed circuit board arranged at an angle to slant
14 outward from the base; and
15 a vertical printed circuit board (PCB) coupled to
16 terminals of the second optoelectronic device in parallel to a
17 second optical axis of the second optoelectronic device, the
18 vertical printed circuit board arranged perpendicular to the
19 base.

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1 76. (Original) The fiber optic module of claim 75
2 further comprising:
3 a housing coupled to the base.

1 77. (Original) The fiber optic module of claim 76
2 wherein,
3 the housing is a shielded housing to encase the slanted
4 and vertical printed circuit boards to reduce electromagnetic
5 interference (EMI).

1 78. (Original) The fiber optic module of claim 75
2 wherein,
3 the slanted printed circuit board and the vertical
4 printed circuit board each have a pin header with a plurality
5 of pins to couple to a host system printed circuit board.

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1 79. (Original) The fiber optic module of claim 75
2 wherein,
3 the slanted printed circuit board and the vertical
4 printed circuit board each have a plurality of pins to couple
5 to a host system printed circuit board.

1 80. (Original) The fiber optic module of claim 79
2 wherein,
3 the base has a pair of cutouts to allow the pins of the
4 slanted printed circuit board and the pins of the vertical
5 printed circuit board to extend through.

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1 81. (Original) The fiber optic module of claim 79
2 wherein,
3 the base has a pair of openings to allow the pins of the
4 slanted printed circuit board and the pins of the vertical
5 printed circuit board to extend through.

1 82. (Original) The fiber optic module of claim 75,
2 wherein the fiber optic module is a fiber optic transceiver
3 and
4 the first optoelectronic device is a transmitter to
5 couple photons into a first optical fiber, and
6 the second optoelectronic device is a receiver to receive
7 photons from a second optical fiber.

1 83. (Original) The fiber optic module of claim 75
2 wherein,

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3 the slanted printed circuit board and the vertical
4 printed circuit board each have a connector to couple to a
5 connector of a host system printed circuit board.

1 84. (Original) The fiber optic module of claim 75
2 further comprising:

3 a housing having an opening at an end coupled to the
4 base.

1 85. (Original) The fiber optic module of claim 84,

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2 wherein,

3 the slanted printed circuit board and the vertical
4 printed circuit board each have a connector to couple to a
5 connector of a host system printed circuit board through the
6 opening at the end of the housing.

1 86. (Original) The fiber optic module of claim 75
2 wherein,

3 the base includes an inner septum to separate the fiber
4 optic module into a first side and a second side.

1 87. (Original) The fiber optic module of claim 75
2 further comprising:

3 a housing having an inner septum to separate the fiber
4 optic module into a first side and a second side, the housing
5 coupled to the base.

1 88. (Original) The fiber optic module of claim 87

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2 wherein,

3 the housing is a conductive shielded housing to encase
4 the slanted and vertical printed circuit boards to reduce
5 electromagnetic interference (EMI) and the septum is a
6 conductive shield to reduce crosstalk electromagnetic
7 radiation.

1 89. (Currently Amended) A fiber optic module for
2 coupling photons between optoelectronic devices and optical
3 fibers, the fiber optic module comprising:

4 a horizontal printed circuit board (PCB) arranged
5 horizontally having a first plurality of pins and a second
6 plurality of pins to couple to a host printed circuit board;
7 a first vertical printed circuit board (PCB) coupled to
8 the horizontal printed circuit board arranged at a
9 perpendicular angle and parallel to a first optical axis of a
10 first optoelectronic device, the first optoelectronic device
11 having terminals coupled to the first vertical printed circuit
12 board; [.]

13 a second vertical printed circuit board (PCB) coupled to
14 the horizontal printed circuit board arranged at a
15 perpendicular angle and parallel to a second optical axis of a
16 second optoelectronic device, the second optoelectronic device
17 having terminals coupled to the second vertical printed
18 circuit board; and

19 a housing coupled to the horizontal printed circuit
20 board.

1 90. (Original) The fiber optic module of claim 89
2 wherein,

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3 the housing is a shielded housing to encase the
4 horizontal and the first and the second vertical printed
5 circuit boards to reduce electromagnetic interference (EMI).

1 91. (Currently Amended) A fiber optic module for
2 coupling photons between optoelectronic devices and optical
3 fibers, the fiber optic module comprising:

4 a base having a first opening and a second opening;
5 a horizontal printed circuit board (PCB) arranged
6 horizontally having a first plurality of pins protruding
7 through the first opening and a second plurality of pins
8 protruding through the second opening to couple to a host
9 printed circuit board;

10 a first vertical printed circuit board (PCB) coupled to
11 the horizontal printed circuit board arranged at a
12 perpendicular angle and parallel to a first optical axis of a
13 first optoelectronic device, the first optoelectronic device
14 having terminals coupled to the first vertical printed circuit
15 board; [.]

16 a second vertical printed circuit board (PCB) coupled to
17 the horizontal printed circuit board arranged at a
18 perpendicular angle and parallel to a second optical axis of a
19 second optoelectronic device, the second optoelectronic device
20 having terminals coupled to the second vertical printed
21 circuit board; and

22 a housing coupled to the horizontal printed circuit
23 board.

1 92. (Original) The fiber optic module of claim 91
2 wherein,

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3 the housing is a shielded housing to encase the
4 horizontal and the first and the second vertical printed
5 circuit boards to reduce electromagnetic interference (EMI).

1 93. (Currently Amended) A fiber optic module for
2 coupling photons between optoelectronic devices and optical
3 fibers, the fiber optic module comprising:

4 a horizontal printed circuit board (PCB) arranged
5 horizontally having a first plurality of pins and a second
6 plurality of pins to couple to a host printed circuit board
7 and a first optoelectronic device having terminals coupled to
8 the horizontal printed circuit board; [.]

9 a vertical printed circuit board (PCB) coupled to the
10 horizontal printed circuit board arranged at a perpendicular
11 angle and parallel to a second optical axis of a second
12 optoelectronic device, the second optoelectronic device having
13 terminals coupled to the vertical printed circuit board; and
14 a housing coupled to the horizontal printed circuit
15 board.

1 94. (Original) The fiber optic module of claim 93
2 wherein,

3 the housing is a shielded housing to encase the
4 horizontal and the vertical printed circuit boards to reduce
5 electromagnetic interference (EMI).

1 95. (Original) The fiber optic module of claim 93
2 wherein,
3 the horizontal printed circuit board is arranged parallel

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4 to a first optical axis of the first optoelectronic device.

1 96. (Currently Amended) A fiber optic module for
2 coupling photons between optoelectronic devices and optical
3 fibers, the fiber optic module comprising:

4 a base having a first opening and a second opening;
5 a horizontal printed circuit board (PCB) arranged
6 horizontally having a first plurality of pins protruding
7 through the first opening and a second plurality of pins
8 protruding through the second opening to couple to a host
9 printed circuit board and a first optoelectronic device having
10 terminals coupled to the horizontal printed circuit board;
11 [[.]]

12 a vertical printed circuit board (PCB) coupled to the
13 horizontal printed circuit board arranged at a perpendicular
14 angle and parallel to a second optical axis of a second
15 optoelectronic device, the second optoelectronic device having
16 terminals coupled to the vertical printed circuit board; and
17 a housing coupled to the base.

1 97. (Original) The fiber optic module of claim 96
2 wherein,

3 the housing is a shielded housing to encase the
4 horizontal and the vertical printed circuit boards to reduce
5 electromagnetic interference (EMI).

1 98. (Original) The fiber optic module of claim 96

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contd.
- 2 wherein,
3 the horizontal printed circuit board is arranged parallel
4 to a first optical axis of the first optoelectronic device.